

Determination

The U.S. Department of Energy, U.S. Environmental Protection Agency Region 10, and Idaho Department of Health and Welfare have completed review of the referenced information for Operable Unit 2-14, as it pertains to the INEL Federal Facility Agreement and Consent Order of 12/91. Based on this review, the Parties have determined that No further
action should be initiated.

Brief summary of the basis for the action:

TRA-58 is four abandoned buried fuel oil lines from TRA 727 to TRA 609. Site is in standby and #5 fuel oil's viscosity is such as to not pose a threat to groundwater or current land use.

References: Track 1 pkg 2/13/01

DOE Project Manager

Zalilaw E. Hair

5/25/01

Date

EPA Project Manager

[Signature]

3/26/01

Date

Idaho Project Manager

[Signature]

4/20/01

Date

**DECISION DOCUMENTATION PACKAGE
COVER SHEET**

RECEIVED

MAR 22 2001

prepared in accordance with

Environmental Cleanup Office

**TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY HAZARD SITES
AT THE INEEL**

Site description: Abandoned Buried Fuel Oil Lines (4) from TRA-727 to TRA-609

Site ID: TRA-58

Operable Unit: 2-14

Waste Area Group: 2

I. SUMMARY - Physical description of the site:

Test Reactor Area (TRA)-58 includes four abandoned buried fuel oil lines, each consisting of approximately 152 meters (500 ft) of 7.62-cm (3-in.) carbon steel piping. The pipelines are buried approximately 1.22 m (4 ft) below the ground surface.

These lines were installed in 1949 to 1950, and were used to transfer #5 fuel oil from the Bunker Fuel Oil Tanks (TRA-727A and TRA-727B) to the pumps in the Steam Plant (TRA-609). Two of the four lines were fuel supply lines, originating in TRA-727, and routing to TRA-609, where they branched to feed the three steam boilers. The other two lines are the return lines for the same fuel, routing directly to the outside diesel storage tanks TRA-727A and TRA-727B. The system operated as a continuous loop. Grade 5 fuel oil is a low grade heating fuel used in industrial burners; it is very viscous and is not a liquid at temperatures below 35 degrees C (95 degrees F). Preheating is usually required for handling and proper atomization. Once it cools, the fuel solidifies to become a thick, viscous gel. It is presumed that an unknown quantity of #5 fuel oil, organic hydrocarbons (the breakdown products of #5 fuel oil), and various trace metals that are typically introduced into #5 fuel oil during the manufacturing process are still contained within these lines.

The lines were abandoned in the late 1980s and the pumps and tanks are currently in standby condition. Storage Tanks TRA-727A and TRA-727B were apparently steam cleaned in 1989. However, a visual inspection of the tanks in 1998 showed that approximately three feet of solidified petroleum waste material remains in the tanks. Mr. George Swaney indicated that the steam cleaning process was unsuccessful in removing all of the material from the tanks, especially the material that had solidified in the bottom of the tanks. The petroleum waste material in the pumps may consist of organic hydrocarbons, the breakdown products of #5 fuel oil, and various trace metals that are typically introduced into #5 fuel oil during the manufacturing process. The valves are closed, tagged-out at the tanks and pumps, and the pump motor control centers are deenergized. There is no documented release from these lines, and there is no evidence of corrosion.

DECISION RECOMMENDATION

II. SUMMARY – Qualitative Assessment of Risk:

Although a source has been identified and exists at this site, there is no exposure pathway for human or ecological exposure. The source is a buried pipeline that is not suspected to have leaked and the pipe is believed to be intact.

The level of reliability of the information collected is moderately reliable, and the qualitative assessment of risk is low. The data were collected and confirmed following documented procedures and no conflicting information is apparent. Therefore, when this information is plotted on the Qualitative Risk and Reliability Evaluation Table an intersection in the “no action” portion of the chart is reached.

III. SUMMARY - Consequences of Error:

False Negative Error. The false negative decision error would be to conclude that there has not been a release from the fuel oil lines into the soil at TRA-58 when in fact there has. If no further action is taken and an undetected release has occurred at the site, there may be higher risk than anticipated.

In the worst case, if the four pipes had contained their maximum volume (2,772.7 L of fuel oil) when they were abandoned in the late 1980s, this is the maximum quantity of fuel oil that could be released to the environment. However, there is no evidence of migration, no documented release from these lines, and no evidence of corrosion. Grade 5 fuel oil is a low grade heating fuel used in industrial burners; it is very viscous and is not a liquid at temperatures below 35 degrees C (95 degrees F). Preheating is usually required for handling and proper atomization. Once it cools, the fuel solidifies to become a thick, viscous gel. Therefore, it is unlikely that any migration has or will occur.

False Positive Error. The false positive decision error would be to conclude that there has been a release from the fuel oil lines into the soil at TRA-58 when in fact there has not. If action were taken at a clean site, this would result in the unnecessary expenditure of resources.

IV. SUMMARY - Other Decision Drivers:

While there may be a risk from leaving the pipeline in the ground, if the pipeline and contents were excavated and removed now, the risk of exposure potential would be increased due to the surrounding facilities, utilities, and other buried lines in the vicinity. Consequently, the risk would be greater by excavating and removing the pipeline now compared to leaving the pipeline in the ground until the entire area can be deactivated.

The material contained in the pipeline is not mobile unless heated above 35 degrees C (95 degrees F); therefore, any leaks in the pipeline that could have occurred would not migrate.

The source of material is contained in a pipeline that is considered to be intact. The pipeline is 1.22 m (4 ft) below grade and currently is controlled by TRA operations.

V. Recommended Action:

The recommended action for TRA-58 is "No Further Action" with institutional controls. TRA-58 will remain under industrial institutional controls, which will consist of Restricted Access, Control of Activities (excavation) and Visible Access Restriction (Warning Signs). If additional information regarding the nature and extent of contamination becomes available (for instance during deactivation of the area), this recommended action will be reconsidered. When the area is deactivated, safety measures will be in place to handle the removal of the materials and surround obstacles. It is estimated that the time required for the pipeline to corrode to a point where the line would be breached is in excess of 100 years.

Signatures	# PAGES:	DATE: 02-26-01
Prepared By: Val Seely	DOE WAG Manager: William Nelson	22 FEB 01
Approved By: Julie Sherwood	Independent Review: Dennis Conway	

DECISION STATEMENT
(by DOE RPM)

Date recd: *March 8, 2001*

Disposition:

The four abandoned buried fuel oil lines from TRA-727 to TRA-609 do not represent a risk to populations or the environment greater than the risk that is probable from disturbance of surrounding facilities and other buried structures. This site should be rated " No Further Action " with institutional controls. The fuel oil lines should be re-evaluated when the facility is deactivated.

DATE: <i>3/16/01</i>	# PAGES (decision statement): <i>1</i>
NAME: <i>Kathleen E. Hain</i>	SIGNATURE: <i>Kathleen E Hain</i>

DECISION STATEMENT
(by EPA RPM)

Date recd: 3/22/01

Disposition:

TRA 58 consists of two supply and two return lines used to transfer #5 fuel oil from tanks TRA-727 A&B to The Steam Plant (TRA 609) pumps. The pumps and tanks are reportedly in standby. These pipes could account for approximately 730 gal and there is no report of the pipes being purged. Given the viscosity of #5 fuel oil, the liquid (if any) in the pipes has solidified. The contaminant worksheet conservatively estimates COC's which may be present. The material in the pipe does not represent a groundwater threat and is associated with the current industrial use (standby). If land use changed the pipe serves to minimize contact with future users. Therefore no additional investigation is warranted.

DATE: 3/26/01

PAGES (decision statement):

NAME: Wayne Pierre

SIGNATURE: 

DECISION STATEMENT
(by STATE RPM)

Date recd: TRA-51

Disposition:

TRA-51 consists of four fuel lines, abandoned in the late 1980's. The lines carried #5 fuel oil from the Bunker Fuel oil tanks to the Steam Plant (TRA-609). The lines have been abandoned but may still contain an unknown quantity of fuel oil. However #5 fuel oil is viscous & (when not heated, and over time degrades to a tarry consistency, further reducing the potential for leakage into surrounding soils.

A conservative volume release is an estimated 732 gallons, based on the internal volume of the pipes.

No further action is recommended for this site.

DATE: 4/20/01

PAGES (decision statement):

NAME: Dean J. Nygard

SIGNATURE:

Dean J. Nygard

PROCESS/WASTE WORKSHEET

SITE ID TRA-58

Col 1 Processes Associated with this Site	Col 2 Waste Description & Handling Procedures	Col 3 Description & Location of any Artifacts/Structures/Disposal Areas Associated with this Waste or Process
Historical processes associated with this site were the routing of #5 fuel oil from the Bunker Fuel Oil Tanks (TRA-727A and TRA-727B) to the pumps in the Steam Plant (TRA-609). Four abandoned buried fuel oil lines are still located beneath the ground surface.	The pipeline contains #5 fuel oil, potentially contaminated with various trace metals.	Artifact: Four Pipelines Location: Extend from TRA-727A and TRA-727B to TRA-609 Description: The four pipelines are each 7.62-cm (3-in.) carbon steel fuel oil lines, and are each approximately 152 meters (500 feet) in length.

CONTAMINANT WORKSHEET

SITE ID Four #5 Fuel Oil Lines (TRA-58)

PROCESS (col 1) The routing of #5 fuel oil from the Bunker Fuel Oil Tanks (TRA-727A and TRA-727B) to the pumps in the Steam Plant (TRA-609)

WASTE (col 2) #5 Fuel Oil with various trace metals

Col 4 What Known/Potential Hazardous Substances/Constituents are Associated with this Waste or Process?	Col 5 Potential Sources Associated with this Hazardous Material	Col 6 Known/Estimated Concentration of Hazardous Substances/Constituents	Col 7 Risk-based Concentration (mg/kg)		Col 8 Qualitative Risk Assessment (hi/med/lo)	Col 9 Overall Reliability (hi/med/lo)
#5 Fuel Oil	Contained within four pipelines	~ 100 %	N/A		Low	High
PAHs**	Contained within four pipelines	Unknown	Unknown		Low	Med
Benzo(a)pyrene***	Contained within four pipelines	Unknown	0.062† – Residential Soil 0.29† – Industrial Soil	0.12 – RBCA~	Low	Med
Benzene‡	Contained within four pipelines	2.48 mg/kg	0.67† – Residential Soil 1.5† – Industrial Soil	0.06 – RBCA~	Low %	Med
Toluene‡	Contained within four pipelines	37.4 mg/kg	520† – Residential Soil 520† – Industrial Soil	5.4 – RBCA~	Low %	Med
Ethylbenzene‡	Contained within four pipelines	12.8 mg/kg	230† – Residential Soil 230† – Industrial Soil	10 – RBCA~	Low %	Med
Xylene‡	Contained within four pipelines	128.2 mg/kg	210† – Residential Soil 210† – Industrial Soil	7 – RBCA~	Low %	Med
Various metals, as listed below:	Contained within four pipelines	Typical concentrations in fuel oil are listed below:				
• Barium*‡	Contained within four pipelines	7.92×10^{-3} mg/kg	5400† – residential soil 1.0E+05† – Industrial Soil		Low	Med
• Chromium*‡	Contained within four pipelines	3.96×10^{-2} mg/kg	210† – residential soil 450† – Industrial Soil		Low	Med
• Copper*‡	Contained within four pipelines	3.17×10^{-2} mg/kg	2.9E+03† – residential soil 7.6E+04† – Industrial Soil		Low	Med
• Iron*‡	Contained within four pipelines	0.92 mg/kg	2.3E+04† – residential soil 1.0E+05† – Industrial Soil		Low	Med
• Lead*‡	Contained within four pipelines	7.92×10^{-2} mg/kg	400† – residential soil 1000† – Industrial Soil		Low	Med
• Magnesium*‡	Contained within four pipelines	0.63 mg/kg	N/A		----	----

CONTAMINANT WORKSHEET

SITE ID Four #5 Fuel Oil Lines (TRA-58)

PROCESS (col 1) The routing of #5 fuel oil from the Bunker Fuel Oil Tanks (TRA-727A and TRA-727B) to the pumps in the Steam Plant (TRA-609)

WASTE (col 2) #5 Fuel Oil with various trace metals

Col 4 What Known/Potential Hazardous Substances/Constituents are Associated with this Waste or Process?	Col 5 Potential Sources Associated with this Hazardous Material	Col 6 Known/Estimated Concentration of Hazardous Substances/Constituents	Col 7 Risk-based Concentration (mg/kg)	Col 8 Qualitative Risk Assessment (hi/med/lo)	Col 9 Overall Reliability (hi/med/lo)
• Molybdenum* ‡	Contained within four pipelines	1.58×10^{-2} mg/kg	390† – residential soil 1.0E+04† – Industrial Soil	Low	Med
• Nickel*‡	Contained within four pipelines	0.23 mg/kg	1.6E+03† – residential soil 4.1E+04† – Industrial Soil	Low	Med
• Titanium*‡	Contained within four pipelines	1.58×10^{-2} mg/kg	N/A	----	Med
• Vanadium*‡	Contained within four pipelines	1.11 mg/kg	550† – residential soil 1.0E+04† – Industrial Soil	Low	----
• Zinc*‡	Contained within four pipelines	4.23×10^{-2} mg/kg	2.3E+04† – residential soil 1.0E+05† – Industrial Soil	Low	Med

* This information was obtained from Environmental Technology Center – Properties of Crude Oils and Oil Products: Bunker C Fuel Oil (see Reference 7)

‡ This information was postulated based on process knowledge of the constituents of fuel oil. An analysis of the TRA-58 fuel oil has not been conducted.

† = PRG (EPA Region 9)

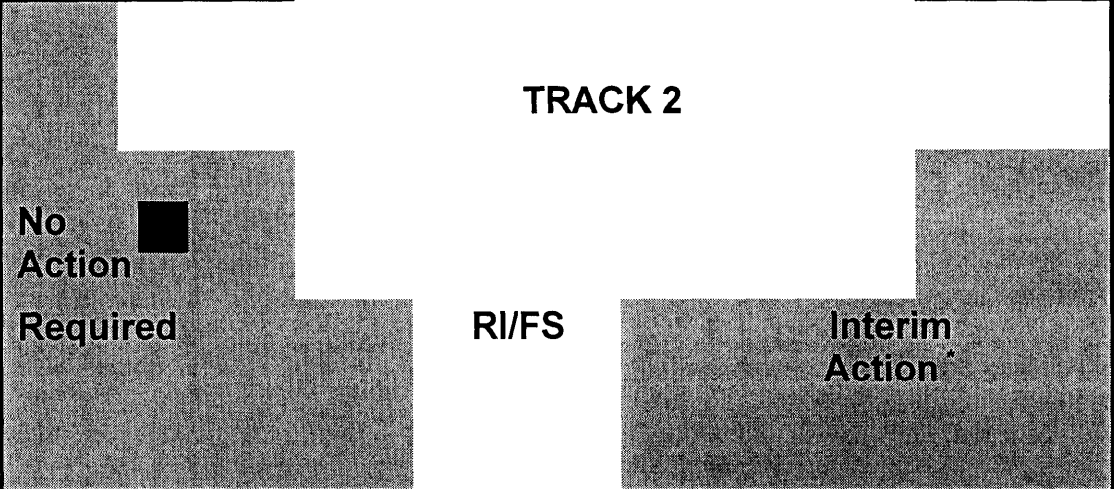
**PAH = polycyclic aromatic hydrocarbon

ppm = parts per million

*** = Benzo(a)pyrene was selected as the worst-case PAH (lowest acceptable contaminant concentration)

~ = Idaho Risk Based Corrective Action Guidance Document, Tier 0 soil cleanup levels (see Reference 8)

% = Although estimated concentrations exceed risk-based concentrations in the fuel oil, there is no exposure pathway for human or ecological exposure, so risk is assessed as “low”.

QUALITATIVE RISK AND RELIABILITY EVALUATION TABLE			
	QUALITATIVE RISK		
	Low	Medium	High
highly unreliable			
highly reliable			
reliability	LOW concentration resulting in risk $< 10^{-6}$	MEDIUM	HIGH concentration resulting in risk $> 10^{-4}$
	qualitative risk		

■ Risk associated with four buried fuel oil lines

■ NOTE: Industrial institutional controls will be required until the site is deactivated and the risk evaluated.

PROCESS Four Abandoned Pipelines

Question 1. What are the waste generation process locations and dates of operation associated with this site?

Block 1 Answer:

There are no waste generation processes associated with this site. The four TRA-58 fuel oil pipelines were installed in 1949 to 1950, and were abandoned in the late 1980s. The pipelines were used to transfer #5 fuel oil to TRA-609. Two of the four lines were fuel supply lines, and the other two lines are the return lines for the same fuel. The system operated as a continuous loop.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the function and the dates of operation of the fuel oil lines is considered highly reliable. The New Site Identification Form (NSID)⁶ identifies the time frame that the fuel oil lines were in operation. In addition, Mr. George Swaney⁴ stated that the valves are closed and the pump motor control centers are deenergized. A visual inspection of the lines was conducted on September 21, 2000; the valves were closed and tagged-out.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the use and dates of operation of the fuel oil lines is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> <u> </u>	Analytical data	<input type="checkbox"/> <u> </u>
Anecdotal	<input type="checkbox"/> <u> </u>	Documentation about data	<input type="checkbox"/> <u> </u>
Historical process data	<input type="checkbox"/> <u> </u>	Disposal data	<input type="checkbox"/> <u> </u>
Current process data	<input type="checkbox"/> <u> </u>	QA data	<input type="checkbox"/> <u> </u>
Areal photographs	<input type="checkbox"/> <u> </u>	Safety analysis report	<input type="checkbox"/> <u> </u>
Engineering/site drawings	<input checked="" type="checkbox"/> <u> 2, 5 </u>	D&D report	<input type="checkbox"/> <u> </u>
Unusual Occurrence Report	<input type="checkbox"/> <u> </u>	Initial assessment	<input checked="" type="checkbox"/> <u> 6 </u>
Summary documents	<input type="checkbox"/> <u> </u>	Well data	<input type="checkbox"/> <u> </u>
Facility SOPs	<input type="checkbox"/> <u> </u>	Construction data	<input type="checkbox"/> <u> </u>
OTHER	<input checked="" type="checkbox"/> <u> 4 </u>		

PROCESS Four Abandoned Pipelines

Question 2. What are the disposal process locations and dates of operation associated with this site?

Block 1 Answer:

There are no disposal processes associated with this site. The four fuel oil lines were never used for disposal.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the function of the fuel oil lines is considered highly reliable. The NSID⁶ describes the function of the fuel oil lines. In addition, Mr. George Swaney⁴ stated that the fuel oil lines were used to transfer fuel oil to the steam pumps in TRA-609.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the function of the fuel oil lines is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box(es) & source number from reference list)

No available information	<input type="checkbox"/> <u> </u>	Analytical data	<input type="checkbox"/> <u> </u>
Anecdotal	<input type="checkbox"/> <u> </u>	Documentation about data	<input type="checkbox"/> <u> </u>
Historical process data	<input type="checkbox"/> <u> </u>	Disposal data	<input type="checkbox"/> <u> </u>
Current process data	<input type="checkbox"/> <u> </u>	QA data	<input type="checkbox"/> <u> </u>
Areal photographs	<input type="checkbox"/> <u> </u>	Safety analysis report	<input type="checkbox"/> <u> </u>
Engineering/site drawings	<input type="checkbox"/> <u> </u>	D&D report	<input type="checkbox"/> <u> </u>
Unusual Occurrence Report	<input type="checkbox"/> <u> </u>	Initial assessment	<input checked="" type="checkbox"/> <u> 6 </u>
Summary documents	<input type="checkbox"/> <u> </u>	Well data	<input type="checkbox"/> <u> </u>
Facility SOPs	<input type="checkbox"/> <u> </u>	Construction data	<input type="checkbox"/> <u> </u>
OTHER	<input checked="" type="checkbox"/> <u> 4 </u>		

PROCESS Four Abandoned Pipelines

Question 3. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Block 1 Answer:

There is no evidence of migration. Grade 5 fuel oil is a low grade heating fuel used in industrial burners; it is very viscous and is not a liquid at temperatures below 35 degrees C (95 degrees F). Preheating is usually required for handling and proper atomization. Once it cools, the fuel solidifies to become a thick, viscous gel.¹ Therefore, it is unlikely that any migration has or will occur.

There is no documented release from these pipelines, and no anecdotal evidence that there was ever a release from these lines. It is not suspected that these lines have leaked. In addition, there is no evidence of corrosion.

Block 2 How reliable are the information sources? High ☒ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

There is no evidence of migration and there are no records available that document any spills or leaks associated with these lines. The American Society for Testing and Materials (ASTM) reference¹ regarding the viscosity of the fuel oil is highly reliable. In addition, Mr. George Swaney⁴ also confirmed that migration of the fuel oil is unlikely.

Block 3 Has this INFORMATION been confirmed? X Yes ☐ No (check one)

If so, describe the confirmation.

The ASTM reference regarding the viscosity of the fuel oil is highly reliable. In addition, the information given in the ASTM reference has been confirmed on a material safety data sheet for #5 fuel oil.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Aerial photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input type="checkbox"/> _____	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input type="checkbox"/> _____
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>1,4</u>		

PROCESS Four Abandoned Pipelines

Question 4. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Block 1 Answer:

Yes, there is evidence that a source exists at this site. The abandoned fuel oil lines are still located beneath the ground surface at this site, and it is presumed that an unknown quantity of #5 fuel oil, organic hydrocarbons (the breakdown products of #5 fuel oil), and various trace metals are still contained within these lines.

The lines have not been used since the late 1980s, the pumps and tanks have been tagged-out, and the pump motor control centers are deenergized.

Block 2 How reliable are the information sources? High ☒ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the content of the fuel oil lines is considered moderately reliable. A complete characterization of the fuel oil to determine the constituents within the line has not been conducted. However, due to the viscosity of the fuel oil, migration of the fuel oil is unlikely. The NSID⁶ identifies the time frame that the fuel oil lines were in operation, and summarizes the actions taken regarding the lines. In addition, Mr. George Swaney⁴ stated that the valves are closed and the pump motor control centers are deenergized. A visual inspection of the lines was conducted on September 21, 2000; the valves were closed and tagged-out.

Block 3 Has this INFORMATION been confirmed? ☒ Yes ☐ No (check one)

If so, describe the confirmation.

The information regarding the current status of the four pipelines at the site has been confirmed by visual inspection, and is highly reliable.

Block 4 **Sources of Information** (check appropriate box(es) & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input type="checkbox"/> _____	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input checked="" type="checkbox"/> <u>6</u>
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>1,4</u>		

PROCESS Four Abandoned Pipelines

Question 5. Does site operating or disposal historical information allow estimation of the pattern of potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?

Block 1 Answer:

There is no estimated pattern of potential contamination because there is no documented release from the fuel oil lines. Also, because #5 fuel oil is very viscous, it is unlikely that any significant volume of soil around the pipeline could have become contaminated from a release.

Block 2 How reliable are the information sources? High ☒ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

There is no evidence of contamination and no records are available that document any spills or leaks associated with the pipelines. The ASTM reference¹ regarding the viscosity of the fuel oil is highly reliable. In addition, Mr. George Swaney⁴ also confirmed that migration of the fuel oil is unlikely.

Block 3 Has this INFORMATION been confirmed? ☒ Yes ☐ No (check one)

If so, describe the confirmation.

The ASTM reference¹ regarding the viscosity of the fuel oil is highly reliable. In addition, this information has been confirmed on a material safety data sheet for #5 fuel oil.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input type="checkbox"/> _____	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input checked="" type="checkbox"/> <u>6</u>
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>1,4</u>		

PROCESS Four Abandoned Pipelines

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Block 1 Answer:

A contaminated region cannot be estimated because there is no documented release from fuel oil lines.

The estimated volume of the four pipelines is 2,772.7 L (732.4 gallons). The four abandoned buried fuel oil lines each consist of approximately 152 meters (500 ft) of 7.62-cm (3-in.) carbon steel piping, and extend from the Bunker Fuel Oil Tanks (TRA-727A and TRA-727B) to the pumps in the Steam Plant (TRA-609). The maximum volume of the four pipelines was estimated by:

$V = \pi r^2 L$, where:

π (π) = 3.14,

r = the radius of the pipe, and

L = the length of the pipe.

Therefore, the maximum volume of the four pipelines is 2.773 m³ (98.2 ft³). Converting this to liters and gallons (where 1 L = 1.0 x 10⁻³ m³ and 1 gallon = 3.786 L), then the volume of the pipe is estimated to be 2,772.7 L (732.4 gallons). This number is very conservative. It is unknown whether any portions of the pipeline walls are corroded, resulting in thinner pipe walls, and a larger volume within the pipeline. Therefore, the thickness of the pipeline walls was not taken into consideration and subtracted from the diameter of the pipes prior to the calculation. Because #5 fuel oil is very viscous, it is unlikely that any significant volume of soil around the pipeline could have become contaminated from a release.

Block 2 How reliable are the information sources? High X Med Low (check one)

Explain the reasoning behind this evaluation.

There is no evidence of contamination and no records are available that document any spills or leaks associated with the pipelines. The ASTM reference¹ regarding the viscosity of the fuel oil is highly reliable. In addition, Mr. George Swaney⁴ also confirmed that migration of the fuel oil is unlikely.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The ASTM reference¹ regarding the viscosity of the fuel oil is highly reliable. In addition, this information has been confirmed on a material safety data sheet for #5 fuel oil.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input type="checkbox"/> _____	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input type="checkbox"/> _____
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>1,4</u>		

PROCESS Four Abandoned Pipelines

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Block 1 Answer:

The estimated maximum quantity of hazardous substance/constituent at this site is contained within the four fuel oil lines. The estimated maximum quantity of fuel oil is 2,772.7 L (732.4 gallons).

It is presumed that an unknown quantity of #5 fuel oil, organic hydrocarbons (the breakdown products of #5 fuel oil), and various trace metals are still contained within the four abandoned buried fuel oil lines, each consisting of approximately 152 meters (500 ft) of 7.62-cm (3-in.) carbon steel piping. Based upon typical chemistry of #5 fuel oil,⁷ concentrations of benzene, toluene, ethyl benzene, and xylene are likely to be in excess of Risk-Based Correction Action standards.⁸

The maximum amount of hazardous substance/constituent that could be contained within the four fuel oil lines was estimated by:

$V = \pi r^2 L$, where:

π (π) = 3.14,

r = the radius of the pipe, and

L = the length of the pipe.

Therefore, the maximum volume of fuel oil that can be contained within the four pipelines is 2.773 m³ (98.2 ft³). Converting this to liters and gallons (where 1 L = 1.0 x 10⁻³ m³ and 1 gallon = 3.786 L), then the maximum volume of fuel oil that can be contained within the four pipelines is estimated to be 2,772.7 L (732.4 gallons). Since a sample of the fuel oil has never been collected and analyzed, the various metals and other fuel oil constituents contained within the fuel oil (quantity and type) are unknown.

Block 2 How reliable are the information sources? High X Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the fuel oil lines is well documented, and is considered highly reliable. The NSID⁶ specifies the content of the fuel oil lines, and defines the length of the lines. The engineering drawings^{2,5} confirm the locations and lengths of the four fuel oil lines. The assumed chemical makeup of the #5 fuel oil is based upon typical chemistry for this product⁷; the actual chemistry may be somewhat different.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the fuel oil lines is well documented, and is considered highly reliable.

Memo of Conversation

Date: 11/30/2000
To: Julie Sherwood
Cc: Neil Snyder
From: Kathy Jensen
RE: TRA Information for Track 1 Reports

The following is information obtained during a conversation with Mr. George Swaney, TRA Environmental Engineer, on September 21, 2000, during a physical inspection all five of the new sites, TRA-56 through -60:

Mr. Swaney provided the TRA Underground Piping Project: Miscellaneous Fuel, Acids, and Air Lines Drawing, Drawing No. 448549, dated September 1993 (origination date). This diagram shows the miscellaneous fuel and acid pipelines associated with TRA.

Mr. Swaney stated that there have been no documented releases with the TRA-56, TRA-58 and TRA-59 pipelines.

Mr. Swaney stated that the TRA-56 pipeline was used for sulfuric acid and was capped at both ends (TRA-631 and the former TRA-645). He provided information from the 1997 TRA-645 D&D Project (INEEL/EXT-97-01026). He stated that he was involved in this project. He also indicated that he saw both solid and liquid sulfuric acid in the TRA-56 pipeline. He provided pictures documenting this information.

Mr. Swaney stated that the TRA-57 pipeline was used for diesel fuel oil and is blind flanged in TRA-627, at the original source. This information was verified upon inspection.

Mr. George Swaney stated that the TRA-58 pipeline contains #5 fuel oil. He stated that two of the lines were fuel supply lines, originating in TRA-727, and routing to TRA-609, and the other two lines were the return lines for the same fuel, routing directly to the outside diesel storage tanks TRA-727A and TRA-727B. He also stated that the valves are closed and the pump control motor centers are de-energized. This information was verified upon inspection.

Mr. Swaney stated that the tanks associated with the TRA-58 pipeline were previously steam cleaned, but the steam cleaning process was unsuccessful in removing all of the material from the tanks, especially the material that had solidified in the bottom of the tanks. He stated that a visual inspection was conducted in 1998 on the #5 fuel oil tanks, and showed that approximately three feet of solidified petroleum waste material remains in the tanks.

Mr. Swaney provided the MTR: Fuel Oil Pump House and Tank Farm Flow Diagram, Drawing No. MTR-D-4679, dated March 1959 (origination date). This drawing shows the configuration of the pipelines and tanks in TRA-627. Mr. Swaney stated that due to the viscosity of the fuel oil and the fact that it had to be heated so that it could be transferred to TRA-609, migration of the fuel oil is highly unlikely.

Mr. Swaney stated that the TRA-59 pipeline was used to transfer sulfuric acid from TRA-631 to TRA-671. He stated that the line was flanged shut at TRA-631, and was capped at TRA-671.

Mr. Swaney stated that TRA-60 is contained within a fenced area North of TRA-608. The Fenced Area North of TRA-608 contains two acid tanks (TRA-731D and TRA-731E), two caustic tanks (TRA-731A and TRA-731B), a pumphouse (TRA-631), a regenerant effluent neutralization tank (TRA-708C), and a brine pit (TRA-731 A), all housed within a bermed area. The tanks are interconnected with a 45-ft long concrete trench that runs east and west. He stated that lead contamination was found in soil sample collected at TRA-60, but none of the processes within TRA-60 contain lead. He also stated that the extent of the lead contamination is not known.